

Alaska's Chilkat River Valley attracts North America's largest gathering of bald eagles (*Haliaeetus leucocephalus*). Aerial surveys were conducted from 1984–94 to assess the fall abundance and distribution of eagles. Surveys were also flown during the nesting seasons of 1984–87 and 1992 to obtain productivity data. Other studies, using radiotelemetry, have documented movements into the Chilkat Valley by eagles from distant locations. Returns of spawning chum salmon (*Oncorhynchus keta*) have recently declined, but still attract large numbers of eagles to the Chilkat. Fall bald eagle numbers varied from 510–3988. Annual peak counts had a mean of 2500 eagles. The designated critical habitat area held 53% of eagles over all surveys. Most occupied nests were abandoned as the nesting season progressed. Only 11% of occupied nests were successful in 1986, 44% in 1987, and an estimated 21% success in 1992. Compared to the marine coastal environment, most Chilkat Valley nest territories do not supply a reliable source of food throughout the entire nesting period. The number of human visitors in the summer increased dramatically, and will expand further with the construction of a proposed docking facility to accommodate large cruise ships.

SEVEN YEARS OF RAPTOR GUILD DYNAMICS IN SEMIARID CHILE

JAKSIĆ, F.M. *Departamento de Ecología, Universidad Católica de Chile, Casilla 114-D, Santiago, Chile*

I report a 7-yr ongoing study in the semiarid region of Chile. Concurrent with the 1987 El Niño episode of unusually heavy rains, a small-mammal irruption was able to support as many as 10 vertebrate predator species (four hawks, four owls, two foxes). As mammal populations declined over the following 5 yr, all of the hawks and half of the owls sequentially left the site. A hard core of two owl and two fox species remained despite a 10-fold decrease in mammalian abundance. A second and milder El Niño event (1992) triggered the recovery of mammal populations to apparently normal levels (100/ha), and owls first and hawks later began to return to the site. One hawk of the original set is still missing. Mammal irruptions are a built-in component of the site's dynamics, and predators display two different strategies to cope with it. Some (the hard core) wait out the lean years while others scatter broadly and thinly over the landscape. Given this type of ecosystem, affected by large-scale and temporally unpredictable factors such as El Niño events, it is very difficult to design preservation units. These results suggest that it is imperative to protect areas with high habitat diversity (e.g., numerous different slopes, exposures, basins, ravines, elevations) in which mammalian fluctuations in different subsets may be out of phase with one another, as I believe that the spatio-temporal variability in the mammalian prey base is at the root of many of the changes in this predatory guild.

SERUM CHOLINESTERASE ACTIVITY FROM MIGRATING RAPTORS IN UTAH

KIM, D.H. *Department of Biology and Ecology Center, Utah State University, Logan, UT 84322-5305 U.S.A.* J.R. PARRISH. *Utah Raptor Flyways, 1065 East Canyon Road, Avon, UT 84328-9801 U.S.A.*

Since the banning of several organochlorine pesticides in the early 1970s, organophosphate (OP) and carbamate (CB) pesticides have seen increased use. Detection of exposure to these compounds involves measuring levels of acetylcholinesterase (AChE) activity from brain tissue or blood serum. With the exception of a handful of domesticated species, there are few published values of brain AChE activity, and even fewer reported values for serum levels in avian species. We will be reporting reference cholinesterase values from all species of diurnal raptors trapped during 1990 fall migration at Squaw Peak banding station in Utah County, Utah and 1993–94 fall migration at Cutler Dam Banding Station in Cache County, Utah. In addition, preliminary data which partially characterizes serum acetylcholinesterase in sharp-shinned (*Accipiter striatus*) and Cooper's (*A. cooperii*) hawks will be reported.

POSTFLEDGING BEHAVIOR OF BURROWING OWLS: EFFECTS OF FOOD AVAILABILITY ON DISPERSAL MOVEMENTS

KING, R.A. AND J.R. BELTHOFF. *Raptor Research Center and Department of Biology, Boise State University, Boise, ID 83725 U.S.A.*

One of the proximate factors that may prompt young birds to leave natal areas is the lack of sufficient food. Young birds may have difficulty locating food after parents terminate care and/or prey reserves become depleted. In either case, young may be forced to seek more abundant prey elsewhere by dispersing. In contrast, if young have easy access to abundant food they may delay dispersal movements or fail to disperse. To investigate the effects of food availability on dispersal, we provided supplemental food to individuals in several family groups of burrowing owls (*Speotyto cunicularia*) in southwestern Idaho in 1994. Supplemental feeding of dead lab mice and day-old chickens began in mid-May and continued until juveniles left their respective natal areas. Our research also examined the behavior of juvenile burrowing owls between the time of fledging and the initiation of fall migration. We radiotracked both adult and juvenile burrowing owls to examine daily movements in relation to natal burrows, association of individuals in family groups, and relationships between individuals in neighboring family groups. Our study is designed to determine when juvenile owls attain independence, when young disperse, if food availability influences dispersal, and when adult and juvenile owls